Section 6.0
Technology Status

6.1 Previous Experience

The pilot-scale treatment system that was set up at the Bendena, Kansas site was EcoMat's first application of their BDN technology for treatment of contaminated groundwater. Prior to this project, EcoMat has applied their technology to the commercial aquarium industry where health of the fish is a prime economic concern. EcoMat is presently the only company to provide the denitrification technology for the aquarium industry. EcoMat's systems are applied at the following aquariums.

- The John G. Shedd Aquarium (Chicago)
- The Albuquerque Biological Park Aquarium
- Biodome de Montreal
- New Jersey State Aquarium
- Sea World of Florida
- Large Aquarium System
- Colorado's Ocean Journey (Denver)

Based on their experience gained during the SITE Demonstration in Bendena, EcoMat has improved dissolved oxygen monitoring by inserting a dissolved oxygen meter into their system.

Currently, EcoMat has installed a small reactor to remove perchlorate from a Department of Defense facility in Southern California (see Appendix A). To treat perchlorate, the process operates on the same principle as for nitrate treatment. In the absence of both dissolved oxygen and nitrate, the bacteria take oxygen from perchlorate and yield a simple chloride ion.

In-house research is being conducted for the nitrification of ammonia. EcoMat has slightly modified their pilot-scale reactor to permit the addition of large amounts of air into the reactor. The bacteria used for nitrification are very different from denitrification bacteria, in that they are highly sensitive to a number of parameters. EcoMat uses an on-line fermentation process to continually produce them.

6.2 Ability to Scale Up

EcoMat has sold systems treating less than one gpm to aquariums and has supplied reactors as large as three cubic meters. They currently have a single reactor design that would treat influent at a flow rate of 200 gpm. EcoMat has also indicated that there is no upper limit to capacity to their technology. For very large systems multiple reactors would be used.